

The electrical installation shall comply to the following codes and standards:

- ## SHOP DRAWING AND CATALOG CUTS

Shop drawings will be required for the following:

- Hiring Diagrams will be required for the following:

- Catalog Cuts will be required for the following:

- ### SUBSTITUTIONS

## QUALITY ASSURANCE

All workmen performing under this Division shall be skilled workmen of the trade involved.

All stages of the installation will be inspected for compliance with the requirements of the Contract Drawings and Specifications. Replace any portion of the construction that does not meet such requirements to the satisfaction of the Engineer.

Provide proper facilities as the Engineer may require for access and for inspection at the construction site.

1. All cutting and patching required for equipment included in these Specifications shall be done by this Contractor. If cutting is done due to failure to perform preliminary roughing work this Contractor will be responsible for the cost of the additional patching.

- ### DISSIMILAR METALS

- ### RACEWAYS AND BOXES

1. Where sizes of raceway or boxes are not indicated, the Contractor shall size these items as required for the installation
2. Flexible metal conduit shall be used for final connection of lighting fixtures and wiring devices to be installed in hung ceilings or in removable hollow metal partition construction. When designated by the Engineer on final approved tenant drawings, flexible metal conduit shall be used for final connection of lighting fixtures and wiring devices to be installed in movable walls or movable partitions. Flexible metal conduit shall be used in hung, designated movable walls and movable partitions at no additional cost to the Authority.

4. All conduit and tubing shall be cut square and reamed at the ends. Red lead shall be applied to all exposed threads after joints have been made up clean and tight.
5. Conduit and tubing runs shall be mechanically and electrically continuous from service starting to all outlets. Conduit shall enter and be securely connected to cabinet, junction box, pull box or outlet box by means of locknuts on the outside and inside and a insulated bushing on the inside. Ta tubing or flexible metal conduit, the one compression locknut shall be made wrench-tight. All locknuts shall be the bonding type with sharp edges for digging into the metal wall of an enclosure and shall be installed in a manner that will assure a locking and electrically continuous installation. Locknuts and bushings will not be required where conduits are screwed into tapped connections.
6. All vertical runs of conduit or tubing terminating in the bottoms of wall boxes or cabinets, or similar locations, shall be protected from the entrance of foreign material prior to the installation of conductors.
7. Unless otherwise specified, all conduit and tubing shall be installed concealed. In general, all conduit and tubing shall be run in hung ceilings and furred spaces where they exist. Where conduit is run exposed it shall be securely supported with zinc coated malleable iron pipe straps or other approved metals.
8. Every conduit system shall be installed complete before any conductors are drawn in. Wire pulling lubricants, when utilized, shall be in accordance with the requirements of Underwriters' Laboratories, Inc., applicable to the specific conductor or cable insulation and raceway material.
9. Where required, and approved by Engineer extra deep or extra shallow outlet boxes shall be used to facilitate the installation of the conduit system.

1. All device plates for wall outlets (Power & Telephone) shall be brushed satin finish anodized aluminum. Device plates for telephone outlets shall contain a bushed hole.

1. Metal raceways, metal enclosures of electrical devices and equipment, lighting standards and other equipment shall be completely grounded in a approved manner.

Provide inserts, expansion shield lugs, anchors, bolts with nuts and washers, shims or any other type of fastening devices required to fasten panels or other equipment to foundations, floors, walls or ceiling. Unless otherwise specified herein or shown on the Contract Drawings, all fasteners shall be hot-dipped galvanized and of sizes and types recommended by the equipment manufacturer and as approved by the Engineer.

1. Unless otherwise specified or specifically indicated on the drawings, all conductors for lighting and power shall be tinned single conductor annealed copper with type THHN or THW insulation, 600 volt and a minimum of 98 percent conductivity.

The Contractor shall match the color-coding that is being used in the Building - any deviation due to limited quantities of cable, may be permitted upon written approval by the Engineer

	<u>System Voltage</u>	
<u>120/208V</u>	<u>Phase</u>	<u>277/480V</u>
Black	A	Brown
Red	B	Orange
Blue	C	Yellow
White	Neutral	Gray
Green	Ground	Green

The wiring for lighting, receptacles including outlets for miscellaneous devices and for electric power, including all 120/280V. connections into the cellular floor systems shown on the drawings, shall be furnished and installed complete from point of service connection to all outlets indicate' on drawings.

1. No splices or joints will be permitted in either feeders or branches except at outlets or accessible terminal, splice or junction boxes.

- not less than one inch from the connector shall be applied. Splices other than the forementioned, will be permitted at discretion of the Engineer.

2. Connections to branch circuit conductors and to existing fixture wiring shall be made by insulated spring connectors or crimp type connectors.

1. All wires shall be identified by circuits in all cabinets, boxes, wiring troughs and other enclosures, and at all terminal points, i.e., receptacles, etc.
2. The circuit designations shall be as shown on the Contract Drawings, or as directed by the Engineer. Tags shall be attached to wires so that they will be readily visible.
3. Brady, B-500 of cloth wire and terminal markers shall be used for all wire identification.

**General**

1. This clause of the Specification covers the furnishing of labor, materials, equipment and the installation of all indoor and outdoor lighting fixtures, lighting equipment and the installation of lamps for all electrical outlets in the building, including the connection of fixtures and equipment to the electric wiring system as shown on plans. As specified hereinafter, certain fixtures shall be furnished by this Contractor while others will be furnished by the Authority for storage, installation and connection by this Contractor.

2. The Contractor is directed to review the applicable Architectural and Electrical Drawings for details on fixture construction and installation media for fixtures to be furnished by the Authority. The drawings represent a concept, not a final design, and reasonable changes to design may be made by the Authority.
3. All luminaires and lighting equipment shall be delivered to the premises complete, including all mounting accessories and components necessary for the proper operation of the equipment exclusive of lamps, whether furnished by the Contractor or by the Authority.
4. All fixtures and components shall be made in accordance with the National Electrical Code, all local codes applying and shall conform to all applicable requirements of the Underwriter's Laboratories, Inc.
5. All recessed fixtures furnished by the Authority will be furnished with fixture wiring only. The Contractor shall provide wiring extensions in flexible conduit and necessary fittings to complete the wiring system connections.

LAMPS

Lamps shall be those manufactured by General Electric Co., Westinghouse Electric Corp. or Sylvania Electric Products Inc. All fluorescent lamps shall be warm white. Incandescent lamps shall be rated at 125 volts except where otherwise noted.

The Contractor shall install new lamps in all new fixtures, and fixtures that are supplied by the Authority. The Authority will supply fluorescent lamps for building type fixtures only, i.e., 1'x4', 4'x4', 20"x50" and 20"x100". All other lamps shall be furnished by the Contractor.

Prior to the issuance of the certificate of final completion, all lamps which are missing, broken or burnt-out shall be furnished and replaced by the Contractor to the satisfaction of the Engineer.

Installation And Locating of Fixtures

Fixture locations as indicated on the electrical drawings are generalized and approximate. The Contractor shall carefully verify fixture locations with Architectural plans, reflected ceiling plans and other reference data prior to installation.

<b>D.V.A.</b>	<b>REVISIONS</b>							
<b>DESIGNED</b>	<b>NO.</b>	<b>DATE</b>	<b>APPD.</b>	<b>DESCRIPTION</b>	<b>NO.</b>	<b>DATE</b>	<b>APPD.</b>	<b>DESCRIPTION</b>
<b>DRAWN</b>								
<b>CHECKED</b>								
<b>IN CHARGE</b>								

CHIEF ENGINEER

*B. M. Talbot*  
ENGINEER OF DESIGN  
AIRPORTS AND H.T.C.  
JULY 6, 1979  
DATE